DOCUMENT RESUME

ED 064 855 EM 009 660

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TITLE	Television and Social Learning: Some Relationships Between Viewing Violence and Behaving Aggressively (Overview).
INSTITUTION	State Univ. of New York, Stony Brook. Dept. of Education.
PUB DATE	71
NOTE	42p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Aggression; *Children; Programing (Broadcast); *Social Behavior; Socialization; *Television; Television Viewing; *Violence
IDENTIFIERS	Observational Learning Theory; *Surgeon Generals Report Television Social Behavior

ABSTRACT

Observational learning requires exposure to modeling cues, acquisition of the ability to reproduce what is seen or heard, and acceptance of the model's behavior as a guide for one's own actions, as imitation, counter-imitation, disinhibition, or inhibition. In this overview paper, the author considers a large body of research, especially that commissioned by the Television and Social Behavior program of the National Institute of Mental Health, and concludes that children are exposed to a great variety of aggressive models and do acquire and are able to reproduce aggressive behavior. Evidence on children's acceptance of aggressive behaviors is described as complex, subtle, and dependent on such factors as rewards to the model, whether the model is seen as fantasy or reality, the observer's home life, and the situations in which he finds himself. However, the author feels that the accumulated weight of the evidence from so many studies justifies the conclusion that at least under some circumstances, exposure to televised aggression can lead children to accept what they have seen as a partial guide for their own actions. (Author/RH)

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Television and Social Learning: Some Relationships Between Viewing Violence and Behaving Aggressively (Overview)

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What are the effects upon children of observing violent television programs? The question is one which has been continually posed since the advent of television sets as a common fixture in the American home almost two decades ago. Answers to it, based both on simple opinion and on research which reflects varying degrees of sophistication and appreciation of the complexity of the phenomenon, have ranged from confident statements that the medium's influence is uniformly pernicious to equally glib assertions that merely watching entertainment fare can do little to shape children's social behavior.

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Although literally hundreds of studies have been focused directly or indirectly on television and its effects upon youngsters since the 1950s, the series of investigations recently commissioned by the Television and Social Behavior program of the National Institutes of Mental Health constitutes one of the first systematic and purposefully coordinated attempts to employ the efforts of a large group of researchers with relevant expertise and diverse viewpoints. Five of these commissioned papers—four experimental reports and a literature review—appear in the subsequent chapters of this book. The purpose of the present paper is to provide a relatively brief overview of the research from which these contributions grew, and to identify and consider both the points of agreement and the inconsistencies that exist among them., This task can best be served by beginning with synopses of the theoretical and methodological questions which relate to the study of television and aggression.

The scientific issue most fundamentally related to the particular question of the effects of television revolves around the nature of *observational* learning, i.e., the way in which the behavior of children (and adults) changes as a function of exposure to the behavior of others. Thus, it is to basic and applied research and theory in this area that we will first turn our attention.

Regardless of their particular theoretical affiliations, investigators interested in socialization have virtually all acknowledged that a child's values, knowledge, and behavior may be developed and molded, at least in part, by observational learning. Specifically, research studies have shown that the simple observation of others can be very potent in changing such widely varied aspects of social behavior as a child's willingness to aid others (e.g., Rosenhan and White, 1967), his ability to display self-control (e.g., Bandura and Mischel, 1965), and his learning of language rules (e.g., Liebert, Odom, Hill, and Huff, 1969). Young children's observation of others *on film* has been shown to produce an impressive level of learning of unfamiliar behaviors (Coates and Hartup, 1969), to increase children's sharing (Bryan and Walbek, 1970), and to markedly reduce phobic reactions (Bandura and Menlove, 1968; Hill, Liebert, and Mott, 1968).

This list represents only a few examples from the impressive body of evidence which suggests that learning by observation is a critical aspect of the social learning processes through which the child is informed about the world around him and molded into an adult member of his society (Bandura, 1969; Bryan and Schwartz, 1971; Liebert and Spiegler, 1970). It is therefore understandable that professionals and laymen alike have become increasingly interested in and concerned about determining the nature and extent to which such social learning occurs as a function of television viewing by children.

Definitions and distinctions

A number of different types of phenomena may, and have been, subsumed under the general classification of observational learning. Thus, in order to avoid confusion regarding the terms used, a series of definitions is provided below (cf. Liebert and Spiegler, 1970). These definitions will be employed consistently in the remainder of this paper and may prove helpful in clarifying both the factual and the theoretical issues which must be addressed periodically as we proceed.

Modeling. Modeling refers to the observed behavior of others, whether presented through direct demonstrations or through films, television, or stories which are heard or read. When modeling cues are presented by direct exposure to other persons, the phenomenon has typically been referred to as *live modeling*, while the behavior of others as observed in movies, television, and other representative media is usually considered to fall in the general category of *symbolic modeling*.

Observational learning. Any and all of the demonstrated consequences of exposure to modeling will be subsumed under the term *observational learning*. Observational learning can take several different forms and may therefore be measured in a number of different ways, depending upon the interests of a particular investigator or the nature of a particular issue.

Acquisition vs acceptance. The broadest distinction among the various forms of observational learning, introduced by Albert Bandura and Richard Walters (1963) almost a decade ago, is between acquisition or the *ability* to reproduce previously unfamiliar acts as a function of observational learning and the subsequent acceptance and spontaneous *performance* of behaviors that are the same as, or similar to, those which have been observed. A child may observe and remember a particular adult's manner of speech, the particular expressions which he uses, or the novel forms of helping (or hurting) others which the exemplar displays without necessarily *adopting* any of these characteristics. Nonetheless, if the observer can reproduce or describe the behavior he has witnessed (for example, when asked to do so), then the most basic form of observational learning, the *acquisition* of new behaviors, has occurred.

The possibility that behavior can be acquired observationally and retained, without necessarily being performed immediately, has important implications for our understanding of the effects of both television and other observational learning opportunities. If a child has learned some new behavior, then he clearly possesses the potential to produce it if (or when) he finds himself in a situation in which such a performance appears to be desirable, useful, or likely to serve his own purposes. Thus, although learning does not necessarily lead to action, it does make

possible the performance of otherwise unavailable forms of social responses. Exposure to novel modeling cues therefore changes the potential range of activities which a child may display when stressed, for example, or provoked, or called upon to act in a situation where these otherwise dormant skills appear to become potentially useful.

Finally, it should be noted that acceptance of another's behavior as a guide for one's own does not necessarily imply an increase in similarity between the behavior of the model and that of the observer. The child who sees a peer burned by a hot stove will typically become *less* likely to touch the dangerous appliance than previously; he accepts the exemplar's actions and consequences as a guide for what he should *not* do.

Direct imitative effects vs. inhibition-disinhibition. Many observationally learned behaviors do lead to acceptance, either immediately or when environmental conditions are conducive. Researchers have noted two related but distinguishable kinds of imitative performance: *direct imitative effects* and *inhibition* or *disinhibition effects*. The concept of direct imitation refers to whether the observer endeavors to exactly reproduce or mimic the behavior which he has observed. A child who repeats exactly some of the expressions used by his father, and a child who precisely matches the kicking, hitting, and other forms of attack against a plastic Bobo doll which he has seen displayed in a brief movie, are both showing direct imitative effects. Likewise, the child in our earlier example who now *avoids* the stove is engaging in direct *counter*imitation.

In contrast, the inhibition-disinhibition dimension refers to the performance of behaviors which fall in the same general *class* as those observed, but may be different in virtually all particulars[2]. Thus, for example, a child who sees his parent donate money to a charity and subsequently becomes more likely to share chocolate cake with his little sister, is showing a disinhibition (or response facilitation) regarding the *class* of sharing.

Inhibition as a function of observational learning represents the other side of the coin from disinhibition. For example, the child who, on the first day of class in the third grade, sees that the new teacher punishes one of his classmates sharply for adamantly announcing his refusal to comply with a particular request, may subsequently become *less* likely to turn in his first homework assignment late. Failing to turn in homework on time and speaking out inappropriately in class are hardly identical behaviors in terms of the particular acts which they involve. However, they fall into a common class of behavior—disobedience to the dictates of the teacher—and thus the behavior of the observer may be traced to the behavior of (and subsequent consequences to) the model.

Integration of processes: the three stages of observational learning

The processes of observational learning outlined above may now be seen to involve three stages: 1) the observer must be exposed to modeling cues; 2) he must acquire and be able to reproduce what he has seen or heard; 3) he may or may not accept the model's behavior as a guide for his own actions. Thus, step 3 may be manifested in imitative effects (i.e., the observer's behavior becomes more like that of the model than previously), which can involve either direct imitation, or disinhibition, or both. Alternatively, the effects of modeling may produce counterimitative effects (direct counterimitation or inhibition). Finally, exposure and acquisition can occur without leading to acceptance, a result which may be thought of as nonimitation. These steps, and the alternatives involved at each of them, are shown graphically in Figure 1.

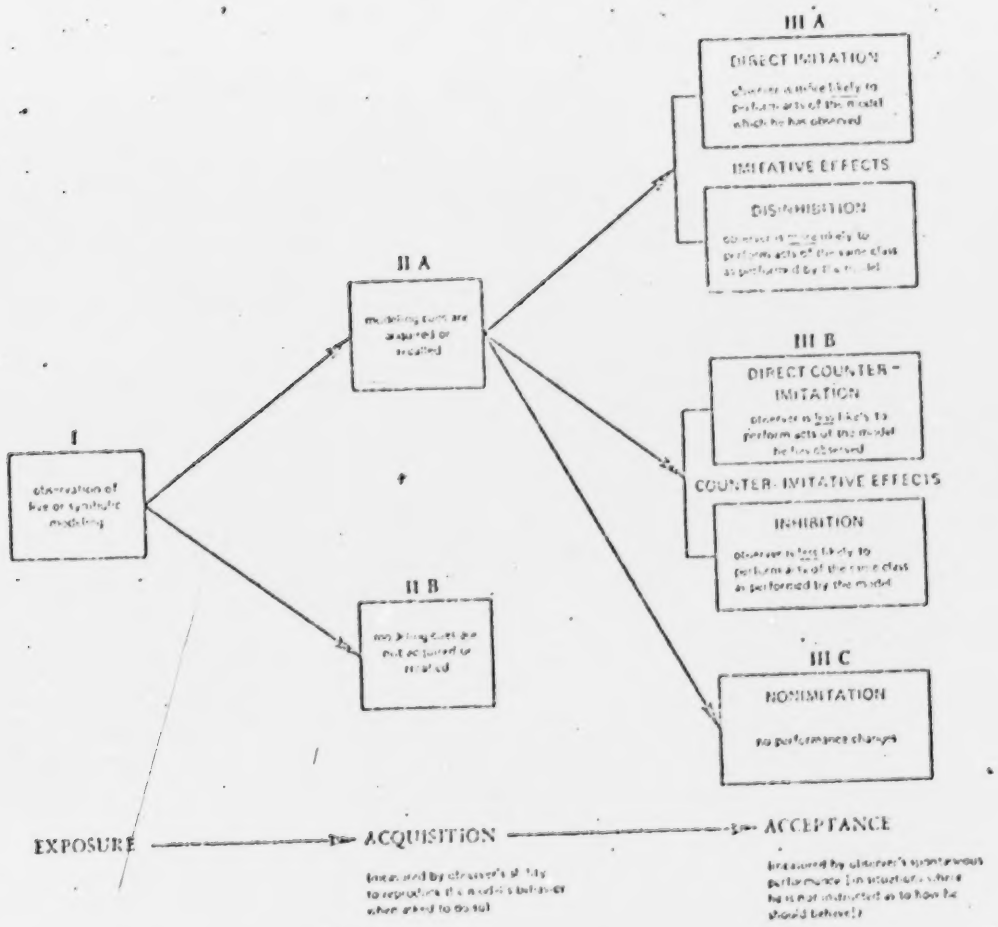


Figure 1. The three stages of observational learning

Figure 1 also suggests that children's exposure to aggressive television programming, a situation in which observational learning may potentially occur, may have a number of different effects. Evidence of each of the possibilities shown is available. However, before we consider these substantive findings, it will be helpful to distinguish among the methods which have been employed to obtain them.

Research approaches to the study of television and aggression

Three somewhat different research strategies, each with strengths and weaknesses, have been employed to explore the question of the effects of television upon children: *survey techniques, correlational studies,* and *experimental investigations.*

Surveys. The survey technique typically involves identifying a relatively large sample of persons (usually several hundred respondents or more), preferably representative of the population at large in terms of age socioeconomic and ethnic backgrounds, and systematically obtaining questionnaire information about such things as the frequency with which they (or their children) watch television, an indication of favorite programs, and so on. Surveys can also be used to determine the nature and contents of television's offerings. In the latter category falls the extensive and sophisticated surveys of George Gerbner (1968, 1971), which have provided valuable information on the amount and nature of current television.

Like all other research efforts, surveys vary in sophistication and in the degree to which we can be confident that their samples reflect the larger population (of children, of programs) which they are designed to probe. A paper by LoSciuto (1971) provides some excellent comments on the criteria and difficulties which characterize this approach. Briefly, it is important that the sample surveyed should be appropriately representative of the population, large enough that descriptions of the sample will closely approximate those of the population, and tapped in such a manner as to minimize the probability that the information-gathering process will bias the information obtained (cf. Neale and Liebert, in press).

Correlational studies. Correlation, as the name implies, deals with the co- or joint-relationship between two or more variables. The method is ideally suited to answering questions of the form: "Do variable X and variable Y go together or vary together?" Such questions have often been asked about television and aggression. Are children who watch a lot of violent television more aggressive than those who watch less? Is the social class of the child's parents related to the amount or kind of programs he watches? Are boys more likely to be influenced by aggressive television programs than girls?[3]

The correlational method is characterized by the fact that all subjects are observed under identical (or nearly identical) conditions. The measurements themselves involve preexisting characteristics of the participants, so that no effort is made to manipulate or control the events to which they are exposed. While this last characteristic appears, at first blush, to be an advantage, it is, in fact, the method's most serious drawback. Without systematically varying the conditions to which subjects are exposed, it is usually not possible to draw causal inferences. A substantial correlation between two variables means that each can be "predicted" from the other statistically, but it does not tell us whether either is the cause of the other. There is, for example, a high positive correlation between the number of churches in a city and the number of crimes committed in that city; the more churches a city has, the more crimes are committed. Does this mean that religion fosters crime? Certainly not. That crime fosters religion? Unlikely. The correlation is due to a third variable—population—which leads to an increase in both churches and crime. Or consider the possibility of a positive relationship between the amount of aggressive television which a child watches and the degree to which he behaves aggressively in life situations. From such a correlation it might be argued that youngsters who observe aggressive television become more likely to aggress as a result of the television fare to which they are exposed—that is, that the television programs cause the aggressive behavior to some degree. This argument *may* be true, but not as a logical inference from the observed relationship.

It is possible that some children are *both* more likely to be aggressive in their own behavior *and* more likely to enjoy watching aggressive programs than others, due to some unidentified "third variable." If this were the case, aggressive children would not be expected to become less aggressive by a change in their television diets, nor would relatively unaggressive children become more aggressive as a function of increased exposure to such programming. It is therefore vital that correlational results be supplemented by research which permits logical inferences about causal relationships in order to determine whether a consistent pattern emerges. For this purpose, the researcher and critic must turn to experimental investigations.

Experimental investigations. In an experimental investigation all subjects are treated alike except for differential exposure to one or more manipulated events or independent variables. They are subsequently tested on one or more measures (referred to as dependent variables which are expected to be controlled by or to depend upon the independent variable. If the subjects are assigned to groups randomly (so that each person had an equal chance of being in any treatment group) or if possible initial differences are otherwise controlled or cancelled out, then the investigator can conclude that the differences in the independent variable (or treatment) caused or produced differences on the

dependent variable(s). For this reason, experimental research is widely considered to be the most powerful research tool in the social sciences.

Exposure to aggressive modeling through television

The question of children's exposure to aggressive modeling through television may be considered in terms of two components: 1) How much of available television fare provides such modeling? 2) How much time do children spend in exposure to such content? Excellent survey research conducted under the auspices of NIMH appears to provide relatively clear answers to both these questions.

Frequency of violent content on the commercial networks. Gerbner (1971) studied the frequency of overt physical violence during prime time and Saturday morning network programs during the fall of 1969 and compared these data with similar 1967 and 1968 studies which they had conducted for the National Commission on the Causes and Prevention of Violence. He found that in 1969, as in earlier years, "about eight in ten plays still contained violence, and the frequency of violent episodes was still about five per play and nearly eight per hour." The violence index (Gerbner's overall measure of the frequency with which violent acts are portrayed) actually rose for one of the networks, NBC, from 1968 to 1969.

Further, since our primary concern is in programs which are likely to be of particular interest to children, it is especially important to note that cartoons, the most violent of programs in 1967, increased their lead in 1969.

Frequency with which children are exposed to violent content. Lyle and Hoffman (1971) conducted an extensive survey of media use among more than one thousand children from widely varied backgrounds. They concluded that "television saturation was almost total; only two percent of the students stated that there was not a working TV set in their home." Their data also show that more than one-third of the first graders are still watching television at 8:30 p.m. on weeknights, and more than one-half of the sixth graders are doing so. Likewise, Stein and Friedrich (1971, this volume) report that, in their sample, television watching was reported to be among the childrens' most frequent waking activities. Lesser (1970) has argued that a child born today will, by the age of 18, have spent more of his life watching television than in any other single activity except sleep.

The pervasiveness of television can be seen even more clearly by moving from percentage figures to absolute numbers. McIntyre and Teevan (1971), citing the Violence Commission staff reports of 1969, remind us that "on one Monday during the period covered, over five million children under the age of 12 . . . were still watching between

10:30 and 11:00 p.m. . . ." They also point to the commission's observations that "there is a great deal of violent content available, at all times of the day, for all manner of intended audience," that "the presentation of violence is typically as a means of achieving virtually any type of goal," and that "the use of violence, whether sanctioned or not, is likely to be a successful means of obtaining such goals."

Moreover, high-violence programs are among young children's favorites. In the Lyle and Hoffman report, for example, first grade children were found to prefer programs of the sort heavily saturated with violence. Twenty-four percent of the children said that cartoons were their favorite type of program, while another 13 percent selected detective and "hip adventure" programs as their favorites. A similar pattern was found in Stein et al.'s (1971) study of preschoolers, whose parents reported that they watched cartoons an average of more than seven hours per week. Even adult violent programs were watched more than a full hour per week by these three- to five-year old children.

Clearly, the first stage of the observational learning of aggression from television, *exposure*, does occur. At this writing, there appears to be no question that violent television fare is available in overwhelming abundance and that children do watch these programs both frequently and regularly. It is to the second stage, acquisition, that we must turn next.

Acquisition

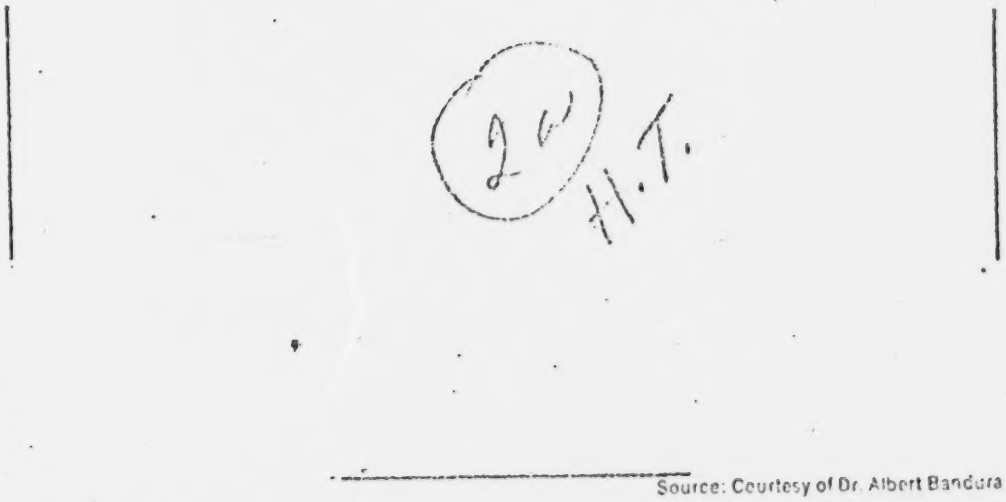
No one would doubt that children can learn novel forms of behavior—both words and actions—from simply watching others. It is, however, only through systematic research that we are able to see the degree to which this form of learning is effectively mediated by television and television-like formats.

As Stevenson (1971, this volume), in his review of the effects of television on preschool children has observed, the Ball and Bogatz (1970) evaluation of the instructional effectiveness of *Sesame Street* provides one of the most comprehensive demonstrations of young children's acquisition of knowledge from television. The conclusion drawn by these writers is one with implications both for the learning of aggression from television and also for the more appetizing prospect of using positive television fare for instructional purposes: ". . . television has been shown to work extremely well as a teaching medium. It achieved this result [refering to *Sesame Street*] not only in learnings that involve simply association (for example, naming letters) but also in learning that involves complex cognitive processes (sorting and classifying) . . ."

Studies designed to show that brief exposure to novel *aggressive* behaviors can lead to their acquisition by quite young children have uniformly shown that this influence is potent indeed (Bandura, 1965; Bandura, Ross and Ross, 1963a; Hicks, 1965). In one such study, for

example, 88 percent of the subjects (3-5 year old boys and girls) displayed imitative aggression of novel modeled acts even though they had not been asked to do so and were free to play with attractive, nonaggressive toys such as a tea set, crayons, cars and trucks, plastic farm animals, and the like.

Particularly striking is the degree to which some of the subjects appeared to be virtually "carbon copies" of the aggressive models whom they had observed. Photographs taken by Bandura and his associates illustrating these imitative effects are shown in Figure 2. The topmost frames show the female model's performance of four novel aggressive responses while the middle and bottom frames respectively depict a male and a female subject spontaneously reproducing the behaviors which they had seen earlier on film.



Source: Courtesy of Dr. Albert Bandura

Figure 2: Photographs from the film *Social Learning of Aggression Through Imitation of Aggressive Models*, illustrating children's acquisition of aggressive responses through observational learning.

Further, there is evidence that behavior acquired in this way may be recalled for long periods of time, as evidenced by delayed retests of acquisition. Hicks (1965) found that subjects shown a simulated television program similar to those used by Bandura and his associates showed substantial acquisition of these behaviors after a single viewing; this acquisition was still in evidence when they were tested again, without further exposure, six months later. In a second study by the same author (Hicks, 1968), about 40 percent of the aggressive responses were

found to be retained for a period of eight months. On the basis of these data, it is relatively easy to concur with Goranson's (1969) conclusion that novel aggressive behaviors can be learned from television and, with even limited practice, be retained for impressively long periods of time.

Since these studies typically involved inanimate rather than human victims, and have been mistakenly criticized for employing this strategy, it may be helpful to note their rationale explicitly. Bandura (1969) has explained the strategy this way:

> A social-learning theory of aggression distinguishes the acquisition of instrumental responses that have destructive or pain-producing potential from the conditions governing their subsequent performance. Aggressive response patterns are characteristically acquired under nonfrustrating conditions in the absence of injurious intent and often toward inanimate objects. Thus, for example, military recruits acquire and perfect combat skills through many hours of target practice and simulated skirmishes; boxers develop hurtful pummeling abilities by using punching bags and sparring partners whom they do not necessarily intend to hurt; and hunters acquire the basic rudiments of hunting by shooting at inanimate targets before they go out in search of game. Indeed, if aggressive repertoires were taught only while individuals were hostilely aroused and entertained injurious designs, many of the tutors and learners would probably be maimed during the acquisition phase.

Recall of particular physical acts must, however, be distinguished from the acquisition and recall of the somewhat more subtle plot themes and relationships which characterize televised stories. In order to explore an aspect of this latter issue, Leifer and Roberts (1971, in this volume) studied age differences in children's understanding of aggression which they observed on television. Almost 300 subjects served in their experiment, including kindergarteners, third graders, sixth graders, ninth graders, and twelfth graders. The primary purpose of this study was to identify age differences in children's understanding of the motives and consequences which attended aggressive acts. Striking age differences were obtained, showing that understanding of motives and consequences increases with age. Specifically, as Leifer and Roberts note: "Kindergarteners could answer only about one-third of the questions about either motives or consequences, third graders only about one-half, and twelfth graders about 95 percent. Hence the younger subjects, by our measures, are not taking in, or retaining, much of the information about motives and consequences in a television program."

The Leifer and Roberts data are consistent with the findings of Stein (1971, in this volume), which show that preschool children were able to remember some of the characters and details of the programs which they were shown in her experimental field study (to be discussed in detail in a later section) but that their recall was very far from perfect. These data seem to show that children will fail to recall much of the "nonaction" detail in a particular sequence which they have observed only once.

Stevenson (1971, in this volume) has noted that enduring recall of such materials would probably be most likely for young children if the

material to which the child is exposed produces emotional responses, if the observed content is discussed with others, or if a common theme is shown repeatedly. Are these conditions met when children watch aggressive television?

Osborn and Endsley (1971) have explored the relationship between emotional reactions and program content. They had four- and five-year-old children observe a variety of programs, including one containing human violence and one containing cartoon violence, as well as cartoon and human programs with no violent episodes. Galvanic skin responses (a measure of emotional reactivity) revealed that the violent programs, and particularly the one containing human violence, produced more emotional responses than did the nonviolent programs. Moreover, (and of particular interest in terms of the acquisition issue), the children showed quite good recall of the contents of the violence programs. In fact, recall of the human violence or cartoon violence programs was significantly better than that of the program showing nonviolent human interaction.

With respect to the second point, Lyle and Hoffman (1971) found that television programs were subordinate only to school as a topic of dicussion among youngsters.

Finally, regarding Stevenson's third point, we may ask, "To what repeated themes and lessons are viewers of violent programs exposed?" Gerbner (1971) has answered lucidly:

> To be able to hit hard and to strike terror in the hearts of one's opponents—that makes one count when the chips are down. The battered hero triumphs over evil by subduing the bad guy in the end. The last man to hit the dust confirms his own flaw of character and cause. Hurting is a test of virtue, and killing is the ultimate measure of man. Loss of life, limb, or mind, any diminution of the freedom of action, are the wages of weakness or sin in the symbolic shorthand of ritual drama. . . .The typical plot ends by reaching a reassuring and usually foregone conclusion . . ."

The data reviewed in this section suggest that children are likely to acquire, with the level of repeated exposure which takes place, a good deal of the aggressive repertoire that they see in televised violence. In fact, by virtue of their popularity and their ability to evoke emotional responses, programs containing violence appear particularly likely to be learned and retained from televised observational experience. Thus it is not surprising that what Goranson (1969) has referred to as the "response forms" of aggression can be reproduced by observers easily and with a remarkable degree of fidelity.

The degree to which children are attentive to or learn from the complex and occasionally sophisticated nuances of plot, intrigue, and verbal aggression in the more "adult" type of crime dramas is not yet well understood. A full grasp of these procedures would require systematically varying the characteristics of otherwise unfamiliar inputs and then exploring their recall and retention across various time period. Research of this type would be extremely valuable theoretically and could play an

important subsequent role in the development of television programs which are designed to teach substantive material and prosocial lessons, an appetizing possibility hinted at both in Stevenson's paper and in the findings of Stein and her associates about the facilitation of prosocial and self-control behavior by *Misterogers Neighborhood.*

However, notwithstanding the preceding qualifications, it is clear that children can and do acquire aggressive behaviors from the type of television fare which is currently available. But the question of whether they accept this material as a guide for their own actions remains.

Acceptance

Results reviewed in the foregoing sections clearly show that children in our society are exposed to a substantial amount of modeled aggression on television, and that repeated exposure to this fare is likely to lead to acquisition of both novel aggressive responses and the perception that aggression is often a potent interpersonal technique for serving one's own ends. The remaining, and perhaps most important, question is the degree to which children accept and utilize information which they have gathered in this way in a variety of performance situations.

Direct imitative and counterimitative effects. Following the theoretical distinctions advanced earlier, our discussion begins with studies of direct imitative and counterimitative effects. There are at least a few instances of direct imitation in naturalistic situations which have been truly unfortunate, such as a lad who was stabbed while he and his friends reenacted scenes from the movie *Rebel Without a Cause* which they had seen on a television rerun (*San Francisco Chronicle,* 1961), or the youngster who doctored the family dinner with ground glass after observing this tactic used successfully on a television crime show (Schramm, Lyle, and Parker, 1961). A more general (if less dramatic) influence of televised aggression upon direct imitation can be seen from experimental studies conducted in the laboratory.

A study by Bandura (1965) is among the most important for a theoretical understanding of the nature of direct imitative effects. Bandura had children watch a model perform a series of aggressive acts against a plastic Bobo doll clown. One group observed the model rewarded for this behavior, one observed the model receive no consequences, and one observed the model punished. When the children were subsequently put in a play situation, those who saw the model rewarded or perform without consequences showed a high level of direct imitation. Not surprisingly, those who observed the punished model, in contrast to the other groups, showed relatively few imitative aggressive responses (that is, showed counterimitation). Nonetheless, when children in all groups were subsequently asked by the experimenter to reproduce as many of the model's aggressive acts as they could, and were offered attractive

incentives for doing so, the previously observed effects of vicarious consequences were entirely eliminated and all groups showed a remarkably high and uniform degree of learning.

Data like the foregoing suggest that when conditions favor activating observationally learned responses into performance, the likelihood of this performance's occurring will not be diminished by the presence of vicarious punishment at the time of observational learning. This evidence may successfully rebut the argument, made by spokesmen for the mass media, that the depiction of violence has no harmful effects on young observers as long as it is ultimately punished. In the light of repeated demonstrations that vicarious punishment does not impede the learning or recall of aggressive acts (cf. Liebert and Fernandez, 1970), it appears that these violent offerings can still have profound effects on the behavior of the viewers by teaching more aggressive responses.

Equally impressive are children's responses to questions regarding direct imitation. When Lyle and Hoffman (1971) asked first graders whether they had ever copied what they had seen on television, more than 60 percent said they had done so. Moreover, when they were asked to indicate the type of program which they imitated in play activities, adventure shows (such as *Batman*) led the list. Not surprisingly, these imitative activities were largely interpersonal in character; the children were much more likely to use television programs as a guide for their play activities when playing with friends than when playing alone.

A recent experiment by Martin, Gelfand, and Hartmann (1970) suggests why adults may often not be witness to the direct imitation of aggressive modeling. These investigators exposed children to an aggressive model and then put them in a situation where aggressive play was possible. Some children performed in the presence of adults, some in the presence of peers, and some alone. The general pattern of results disclosed that *the presence of an adult reduced the amount of aggression* but that the presence of a *same-sexed peer* increased aggression, relative to the control group. Thus, in life situations, the most powerful effects of aggressive modeling may occur under circumstances where they cannot be observed by parents or other adults. Goranson (1969), citing earlier studies, reached a similar conclusion: ". . . parental evaluation or instruction regarding the permissibility of aggression seen in media can be effective in controlling aggression imitation, but this communication may be irrelevant when adults are not later present to monitor the child's behavior."

That direct imitative effects after observing aggression may occur for more than just the type of *play* activities described above, is indicated by the results of several recent experiments. In the first of these (Hanratty, Liebert, Morris, and Fernandez, 1969), four- and five-year-old boys from a Sunday school kindergarten served as subjects. Half the subjects observed a two-and one-half-minute color sound film in which

an adult male model aggressed against a human clown. The behavior displayed by this symbolic model included sharp and unprovoked verbal insults to the clown, shooting at the clown with a toy machine gun, and beating the clown vigorously with a plastic mallet. Half the group saw no such film.

Thereafter, half of the subjects in each of these groups were permitted to play in a research room, where they found a human clown standing idly, as well as a mallet and a toy gun. The remaining children were placed in a comparable situation, except that they found a plastic Bobo doll rather than a human. The children were left in this situation for ten minutes, during which time their aggressive responses toward the clown, plastic or human, were recorded. Not surprisingly, the brief film did increase children's aggression against the inflated Bobo. However, regardless of whether the children had seen the aggressive film or not, the majority of those who were placed with the plastic toy exhibited some aggressive action. In contrast, of the children who had not observed the movie, none engaged in any sort of aggressive behavior toward the human clown. There are, of course, strong inhibitions for aggressing against a human being, even one who is attired as a clown, and there was no provocation for doing so. Nonetheless, observation of the aggressive movie did elicit physical assaults against the human clown, including at least one swat with the mallet which was hard enough that the victim showed a red mark on her arm several hours later.

In a second experiment (Hanratty, 1969), it was again found that a film of this type, without other provocation, would lead children to physically assault a human victim. Moreover, such aggression was displayed by both boys and girls (only boys had participated in the first experiment) and for films in which both an eight-year-old boy and an adult served as models. This finding has been essentially replicated a third and a fourth time with somewhat older boys (Hanratty, O'Neal, and Sulzer, 1971; Savitsky, Rogers, Izard, and Liebert, 1971), although in the Hanratty et al, (1971) study, frustration did interact with modeling for these older and perhaps more inhibited observers.

Since direct imitative effects definitionally require a circumstance virtually identical to the one observed, it has been argued that they are less important, from a social point of view, than inhibitory and disinhibitory effects. However, it is precisely in this last category that the greatest controversy has raged regarding the adequacy and interpretation of research results. This is also the area in which greatest research emphasis has recently been placed—as evidenced by the fact that all four original studies appearing in the present volume, and almost half of all of the studies sponsored by NIMH, sought evidence about the inhibitory or disinhibitory effects of observing aggressive television in terms of a willingness to aggress against other persons.

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Inhibitory and disinhibitory effects: correlational studies. Several recently completed correlational studies bear directly on the possibility of a relationship between the amount of violence a child observes and the amount of aggressive behavior which he displays in naturalistic situations.

Working with adolescent subjects, McIntyre and Teevan (1971) found a relatively small but consistent relationship between objective ratings of the amount of violence on programs which youngsters reported watching and deviant behavior as measured by a variety of indices. Interestingly, this relationship becomes somewhat stronger if the degree of violence of the television programs is assessed by the subject's own perceptions than if it is assessed by objective ratings. Likewise, these investigators found a positive relationship between the violence rating of the subject's favorite programs and the degree to which they expressed approval of violence. Further, while violence was more likely to be approved if it had been rewarded than if it had been punished, McIntyre and Teevan point out that "whether the characters were viewed as behaving the way people ought to act has no effect on the frequency of approval." They specifically note:

> Those adolescents whose favorite programs are more violent more frequently approve of a teenage boy punching or knifing another teenage boy. If the favorite program is described as depicting violence as a means to an end, or violence rewarded, teen violence is approved more often than if the program were not so described. Whether or not the program "shows the way people ought to act" does not influence frequency of approval.

In another NIMH-sponsored correlational study, Dominick and Greenberg (1971) determined, through the use of a questionnaire technique, the amount of exposure to television violence for 434 fourth-, fifth-, and sixth-grade boys enrolled in Michigan public schools during the spring of 1970. Evaluation of the violent content of the programs themselves was based on earlier analyses of newspaper and magazine critics (see Greenberg and Gordon, 1971). Exposure was then related to the boys' approval of and willingness to use violence, as measured by the items drawn from the Sears Antisocial Aggression scale (1961) and the Buss-Durkee Hostility Inventory (Buss, 1957) respectively. Measures were also obtained of the degree to which the boys perceived violence as effective and the degree to which they suggested violent solutions to conflict situations when presented with open-ended questions. In this investigation, specific predictions regarding, interactions between family attitudes and social class on the one hand, and exposure to violent content on television on the other hand, had been advanced. Consistent with predictions, exposure to aggressive television was related to the boys' stated willingness to use violence and to their perceptions of its effectiveness when used. The direction of these influences was consistent with hypotheses; higher exposure was associated with greater approval.

As Dominick and Greenberg note, one of the most intriguing aspects of their findings is the tendency for violent exposure to be more often associated with violent attitudes for middle-class than for lower-class youngsters. It is the case, however, that when the home environment is weak in efforts to control the development of aggressive attitudes, then the relationship between exposure to violence on television and the child's own attitudes become stronger. In the investigators' own words: ". . . for relatively average children from average home environments, continued exposure to violence is positively related to acceptance of aggression as a mode of behavior. When the home environment also tends to ignore the child's development of aggressive attitudes, this relationship is even more substantial and perhaps more critical."

Dominick and Greenberg used the same methods to relate television violence and aggressive attitudes for girls. The results closely paralleled those for boys, with exposure to such aggressive fare making a "consistent independent contribution to the child's notions about violence. The greater the level of exposure to television violence, the more the child was willing to use violence, to suggest it as a solution to conflict, and to perceive it as effective."

In yet another correlational study conducted for the Television and Social Behavior program, McLeod, Atkin and Chaffee (1971) examined the relationship between viewing of televised violence and a variety of measures of aggressive behavior in two relatively large samples of adolescents, one in Maryland and another in Wisconsin. The study is noteworthy for its careful consideration of multiple correlations among a variety of predictor variables and for reports of internal consistency among all the measures employed. The outcome of these correlational studies may be summarized in the author's own words:

> Our research shows that among both boys and girls at two grade levels [junior high and senior high] the more the child watches violent television fare, the more aggressive he is likely to be as measured by a variety of self-report measures. . . .Partialing out [total] viewing time slightly reduces the positive correlations of violence viewing and aggressive behavior in most cases, but the basic result is the same as for the raw correlations . . . .Similarly, the partialing out of socioeconomic status and school performance does not alter the basic pattern of raw correlations. . . .We may conclude, then, that adolescents viewing high levels of violent content on television tend to have high levels of aggressive behavior, regardless of television viewing time, socioeconomic status, or school performance. These partials appear to rule out as alternative explanations simple television exposure, social status and general competence as a student.

A particularly sophisticated correlational study of television and aggression was undertaken by Lefkowitz, Eron, Walder, and Huesmann (1971). The Lefkowitz et al. report is based on a longitudinal study of the entire population of children of a particular age in a rural New York county and involved approximately 900 youngsters. Designed from the outset to relate children's aggressive behavior to various familial, social, and experimental factors which might influence it, these investigators

employed a peer measurement technique of aggression (focusing exclusively upon acts which would harm or irritate other persons). The measurement instrument has been amply researched (Walder, Abelson, Eron, Banta and Laulicht, 1961) and accepted by investigators of different theoretical persuasions (e.g., Feshbach and Singer, 1971).

The first measures obtained in this study of television and aggression revealed a significant relationship, for male subjects, between the amount of television violence which they watched in the third grade and independently assessed peer ratings of aggression in the classroom at that time (Eron, 1963). This correlational finding was later replicated with a different sample—eighth grade boys and girls in an urban city in the South.

Lefkowitz et al. recently completed the longitudinal phase of their study by obtaining data from more than 400 of the youngsters whom they had studied ten years earlier. The measures obtained included peer ratings of aggression at this age, self-reports of aggression in an interview, and self-reports of various aspects of television viewing. The results of this ten-year followup showed that (but again only for boys) amount of aggression watched in the third grade was significantly related to peer ratings of aggression at age 19.

Additionally, using a sophisticated approach technically referred to as a *cross-lagged panel design*, Lefkowitz et al. showed that their findings provide stronger evidence for a causal relationship than is usually available from correlational studies. To understand the basic logic behind this approach, [4] consider the possibility, raised in our earlier discussion of correlation studies, that a relationship will appear between overt aggression and preferences for aggressive television simply because persons who are more willing to use aggression themselves are also more likely to enjoy seeing it used by others in television dramas. This is an important "rival hypothesis" to the notion that seeing aggressive television *causes* aggressive behavior. However, if the rival hypothesis were correct, preferences for aggressive television at age 19 in the Lefkowitz et al. study should "go together" with overt aggression in the third grade as closely as preferences for aggressive programs in the third grade go with aggression at age 19. In other words, the relationships, if accounted for by a constant third variable, should go both ways in time.

In contrast, if television aggression does cause aggressive behavior later, it would be plausible to find a link between earlier television watching and later aggression but not vice versa. This is exactly what was disclosed by the Lefkowitz et al. data. Third-grade preferences for aggressive television predicted later aggression, but later television preferences did *not* relate to the youngsters' earlier aggressive behavior at all. For this reason, it is reasonable to agree with the investigators' interpretation of their findings: that, for boys, ". . .on the basis of the cross-lagged correlations, the most plausible single causal hypothesis would

appear to be that watching violent television in the third grade leads to the building of aggressive habits" and ". . .that a substantial component of aggression at all three grade levels and a particularly large component at the thirteenth grade can be predicted better by the amount of television violence which the child watched in the third grade than by any other causal variable measured and reinforces the contention that there is a cause and effect relation between the violence content of television and overt aggressive behavior."

The possibility that many of the effects of viewing aggressive television are cumulative over many years as suggested by Lefkowitz et al., is also raised by the Stein and Friedrich report. These latter investigators did not find a relationship between interpersonal aggression during the first few weeks of nursery school and home viewing of aggression for their very young (3-5-year-old) subjects, although such a relationship has been repeatedly found for older children and adolescents. (There are of course, other possibilities, and Friedrich list several of them.)

The correlational studies of Dominick and Greenberg (1971), of Lefkowitz et al. (1971), of McIntyre and Teevan (1971) and of McLeod et al. (1971) uniformly show an association between exposure to aggressive television and aggressive attitudes and/or behavior for elementary school-age and adolescent subjects. The fact that the Lefkowitz et al. study shows such an effect only for boys is less inconsistent than it appears at first blush, since the measure focused on the actual performance of aggressive acts, negatively sanctioned for girls in our culture, while the other studies focused on approval for aggression or other attitudinal measures. This last study is also best able to stand in its own right, because it uses the longitudinal cross-lagged correlational approach.

All these correlational studies may be legitimately challenged as not firmly showing causation; they should, however, increase our confidence in the external validity (the applicability beyond the laboratory) of experimental studies designed to elucidate causal relationships and underlying processes if a consistent pattern emerges.

Disinhibitory effects: experimental studies

A number of studies conducted during the 1960s showed that observation of filmed or televised aggression would disinhibit children's willingness to aggress on a variety of measures.

In a relatively early experiment, Lovaas (1961) showed that nursery school children's aggressive behavior would be increased following exposure to symbolic aggressive stimuli. One group of subjects saw sequences from an aggressive film entitled *Rassling Match*, which provided an almost continual display of one cartoon figure aggressing against another by hitting, biting, and the like. A second group of children saw a

film depicting three baby bears and a mother bear engaging in gentle play activity. Following the film, subjects were presented with two large toys, and their play activities were observed. Depressing the lever on the aggressive toy mechanism automated a doll who turned and hit a second doll on the head with a stick. Depressing the lever on the nonaggressive toy apparatus triggered a wooden ball, enclosed in a cage, to jump through obstacles. The subjects were presented with the doll toy and the ball toy side by side, so that they could operate either toy or both simultaneously, if they wished. Children engaged in significantly more play with the hitting dolls after exposure to the aggressive film than after the nonaggressive film.[5]

In view of the fact that most television programs appear to depict aggression as a potent technique for power and achievement, studies which have focused upon the inhibiting and disinhibiting effects of consequences accruing to a model for aggression are of particular importance. In one such study, Bandura, Ross, and Ross, (1963) exposed one group of nursery school boys and girls to a television program in which one character, Johnny, refuses another, Rocky, the opportunity to play with some toys. The program goes on to show a series of aggressive responses by Rocky, including hitting Johnny with a rubber ball, shooting darts at Johnny's ears, hitting Johnny with a baton, lassoing him with a hula-hoop, and so on. At the end of this sequence, Rocky, the aggressor, is playing with all of Johnny's toys, treating himself to sweet beverages and cookies, and finally departs with Johnny's hobby horse under his arm and a sack of Johnny's toys over his shoulder. At this point, a commentator announces that Rocky was victorious. In a second group, the program was rearranged so that after Rocky's initial aggression, Johnny retaliated in kind by administering a sound thrashing to the aggressor.

Two other groups served as controls; in one, a nonaggressive but highly expressive television program was observed, and in the second no television program was seen. Children's subsequent aggressive responses while playing for twenty minutes in a special test room constituted the primary dependent measure. The results clearly showed that children who observed a rewarded aggressor showed far more aggression themselves than children in the other groups. Moreover, at the conclusion of the experiment the children were asked to state which of the characters, Rocky or Johnny, they would prefer to emulate. Sixty percent of those who observed Rocky rewarded for his behavior indicated that they would select him as a model, whereas only 20% of those who saw him punished indicated that they would choose to emulate him. Additionally, the authors noted a classic example of how socially reprehensible but successful modeled aggressive acts may influence children. One of the girls, who had expressed marked disapproval of Rocky's aggressive behavior as it occurred, later exhibited many of his aggressive responses. Finally, in an apparent effort to make her emulation of the ruthless but successful Rocky complete, she turned to the experimenter and inquired, "Do you have a sack here?"

Like research in direct imitative effects, investigations of disinhibitory effects have not been limited to the study of play activities. For example, in a series of three experiments, Walters and Llewellyn-Thomas (1963) evaluated the influence of film-mediated aggressive models upon hospital attendants, high school boys, and young female adults. In these studies subjects in experimental groups watched the knife fight scene from the movie *Rebel Without a Cause*, while control subjects watched a sequence which showed adolescents engaging in constructive activities. Both before and after exposure to the film all subjects were asked to participate in what was ostensibly a "conditioning" experiment which required them to administer electric shocks to another person for making "errors" on a learning task. The difference in the intensity of shocks which the subjects administered in the two sessions served as the primary dependent measure. In all three experiments, subjects exposed to the aggressive film significantly raised the shock levels which they administered relative to the controls. It is important to note that this heightened aggression was manifested in a situation entirely different from the one depicted in the film, and by subjects drawn from three rather different subcultures.

A particularly well-designed study of the effects of observing aggression was conducted by Hartmann (1969). In this investigation, delinquent adolescent boys were either angered or treated neutrally and then showed one of three films, two of which were aggressive in content. Regardless of whether they were angered or not, seeing an aggressive film produced more subsequent aggression (ostensible electric shocks to another person) than did the neutral film. Moreover, and of particular importance, boys with a past history of aggressive behavior were more aggressive than other boys. This finding, and a similar finding by Wolf and Baron (1971) [comparing college students and convicts with records of assaultive crimes] provide validation for the assertion that laboratory measures involving button pressing which (ostensibly) inflicts harm are related to interpersonal aggression in naturalistic situations.

A study reported by Feshbach and Singer (1971a), also involving adolescent boys, is directly at odds with both the findings of the Walters and Thomas and Hartmann studies and with the preponderance of research in the area. The study was conducted with approximately 400 boys who were enrolled either in residential private schools or in boys' homes serving youngsters who are either mildly disturbed or whose families are unable to care for them. Approximately half the subjects in each institution were permitted to watch a predominantly "aggressive" diet of television programs while the remaining subjects were permitted to watch a diet containing primarily nonaggressive programs.

Among the subjects from the four boys' care homes, significant differences between the groups were found on measures of aggressive behavior in three of them (as rated by institutional personnel) during the six weeks of the experiment. Specifically, in these institutions, boys exposed to the predominantly aggressive diet were *less* aggressive than

those exposed predominantly to nonaggressive programs. In contrast, the data reveal virtually no significant differences between the aggressive and the control program groups for boys in the private schools. However, although limited to lower-class institutionalized males of a particular age range, the results reported by Feshbach and Singer remain an anomalous outcome. Unfortunately, there are a number of fundamental design problems in this study which cast doubt on both the internal and the external validity of the outcome. For example, in two of the three institutions in which significant results were obtained the control ("non-aggressive diet") subjects objected very strongly because *Batman* was not available to them. The experimenters then acceded to the demand by adding this program to the control diet. Another problem is that the data themselves were collected by untrained institutional employees rather than by trained personnel, but no adequate reliability checks appear to have been made nor was the probability of rater bias dealt with systematically. Additionally, the control group boys may have behaved more aggressively because of being deprived of some of their favorite programs. A more complete discussion regarding the Feshbach and Singer study appears in another Volume 5 in this series.

In a more recent study, Liebert and Baron (1971, in this volume) sought to investigate the question of whether exposure to aggression, as modeled in actual television fare, would disinhibit younger children in terms of their willingness to hurt another child. The investigators exposed children of both sexes and two age groups (5-6, 8-9 years) to brief excerpts taken directly from publicly broadcast television shows. For children in one group, these excerpts depicted instances of aggression (a brutal fist fight, a shooting, and the like), while for children in a second condition, exciting but nonaggressive sporting events were shown. Following exposure to one of these two programs, children in both groups were provided with a series of opportunities to either *hurt* or *help* another child by pushing, respectively, either a red or a green button. The children were told that pushing the green button would help this child (who was not actually present during the study) to win a prize, but that pushing the red button would hurt him. In addition, they were informed that the longer they pushed either button, the more the other child would be helped or hurt. Results indicated that children who had observed the violent scenes pushed the red button for a significantly longer period of time than those who had observed the nonaggressive scenes.

In another study concerned with disinhibitory effects, Leifer and Roberts (1971, in this volume) obtained information on the subsequent willingness to aggress of children and adolescents (kindergarteners through twelfth graders) after they watched television programs which differed in the amount of violent content displayed. The programs were taken directly from the air, without editing. The children were first tested on their recall and understanding of the motives and consequences of the violent acts which they had seen and were then tested on a specially

designed response hierarchy of their willingness to aggress. The child was presented with a series of real-life situations ("You're standing in line for a drink of water. A kid comes along and just pushes you out of line. What do you do?") and asked to choose between a pair of alternative responses. One of the alternatives was typically aggressive ("Push them"), while the other was not ("Go away").

In addition to finding that children chose physical aggression on the response hierarchy described above more often at older than at younger ages, they also found an important relationship between the amount of violence in the program a child viewed and his subsequent willingness to select physically aggressive responses after television viewing.

Specifically, the more violent programs reliably produced higher levels of aggressive responding than the less violent ones. It is of further interest that, in this experiment, understanding the motivations for, and consequences of, violence in a program did *not* account to a significant degree for the aggression scores. It appears that the instigating effect of viewing violence is not reduced by an increased understanding of the motivations and consequences which surround it, at least for this measure and these age groups. It is also of interest to note that the differential effects of program content upon willingness to aggress tended to vary with age, although these differences are not significant. The nature of the tendency is that the relationship between amount of violence and subsequent physical aggression on the response hierarchy measure tended to be greater for kindergarteners and third grade children than for children in the sixth, ninth, or twelfth grades.

In interpreting their results and correctly identifying the study's major methodological weaknesses, Leifer and Roberts note:

> Whatever analysis was performed, the amount of violence in the program affected the amount of aggression subsequently chosen. Nothing else about the program—the context within which violence was presented—seemed to influence subsequent aggression. Furthermore, our measures of understanding of the cues hypothesized to control aggression—motivations and consequences—did not relate at all to aggression choices. These results are not encouraging in their implications; however, they should be interpreted with some caution. All children were tested on their understanding of the motivations and consequences in the programs *before* they were tested on the response hierarchy.

Leifer and Roberts also report six other studies, varying in their major purposes, in which the effects of televised aggression upon children's aggressive choices could be assessed. Three of these provide further evidence for a disinhibitory effect while none suggests a decrease in aggressiveness after exposure to aggression. This latter negative finding is of some interest. Even observing aggression which had both bad motives and bad consequences (in programs produced by special editing) did not reduce aggression relative to a nonaggressive program.

While television and film programs, as typically observed in both naturalistic and laboratory situations, do not formally state whether they are real or fictional in character, the provision of such specific introductions and descriptions may potentially play an important role in their

effects. For example, Orson Welles's radio play version of H. G. Wells's *War of the Worlds* was apparently perceived as reality rather than fiction by many adult listeners, some of whom went into the streets armed in order to defend themselves against invading Martians. Parents who observe that their children are becoming upset by stories, movies, and television plays often provide reassurance that what is being seen or heard is "just a story" or "not real." Do such reminders, explanations, or "identifying statements" moderate the influence of observing aggression on television?

A series of experiments conducted by Feshbach (1971, this volume) was designed to determine if the effects of film-mediated violence upon children varies as a function of whether the material was said to be taken from "real life" or was specifically identified and labeled at the outset as fictional or fantasy material.

Feshbach advanced the hypothesis that ". . .aggressive tendencies should be lessened or unaffected to the extent that dramatic content functions as fantasy in the larger, cognitive sense and is perceived as fantasy in the narrower, fictional sense. If the dramatic content is perceived as 'real,' the possibility of facilitating aggression through such processes as imitation, instruction, and disinhibition should be considerably enhanced." He reported three experiments related to this hypothesis. In the first of these, in which the subjects were 9-11-year-old boys from either lower- or middle-class families, three experimental conditions were used: real aggression, fantasy aggression, and control. Among those in the aggression conditions, half the subjects in each group witnessed a war sequence and the other half saw a police action sequence. Control children were shown either a circus film or no television whatsoever. The dependent measure was a response box designed as an "aggression machine" and was similar to the widely accepted type of apparatus used by Mallick and McCandless (1966) and by Liebert and Baron (1971) in their report in this volume.

In addition to the fact that actual newsreels or movie scenes from Hollywood were used, subjects in each of the groups were specifically "set" by the experimenter in terms of what they were about to see. Thus, for example, boys exposed to the reality-army film were told that they were ". . .going to see a war film made by a Hollywood studio." Following observation of one of the films, the subjects were administered an adjective check list to assess their moods. Subsequently, they performed on the aggression machine. While some interesting changes both in mood and in program evaluations were noted, no significant overall differences were obtained on the measure of aggression against another person.

In his second experiment, Feshbach employed the same violent film for both fantasy and reality groups, but, as he notes, ". . .under clearly different set conditions. In one experimental treatment, the subject believed he was seeing a film of a real event; in another treatment, the subject was shown the same film but was led to believe that it was

fictional." In the fantasy set condition, the subjects were told: "We are going to show you a film that was made in a Hollywood studio. The story is about a student riot. You might have seen some of the actors on television before." The aggressive film was a combination of the campus riot reality and fantasy films of his first experiment.

The adjective mood list was again presented prior to the opportunity to aggress, so the study shares the methodological problem of an "intervening test" that also weakens the Leifer and Roberts investigation. Results clearly indicated that children exposed to the aggressive reality film are more aggressive than those exposed either to no film or to the fantasy one. Likewise, as Feshbach had expected, children in the fantasy set condition showed less aggression than children who had not observed a film at all. No important changes in mood, as measured by a questionnaire, were detected. It is unfortunate that this experiment did not include a control group in which no "set" at all was given. Thus, especially since many young children may perceive fictional television drama as presenting real-life situations, it would be difficult to extrapolate from the data as they stand to naturalistic television viewing by children. Nonetheless, the finding is potentially quite important, and the hypothesis clearly merits further research.

In a third experiment, Feshbach endeavored to determine the differential effects of reality *vs* fantasy set on aggression machine behavior when subjects were told that the aggression machine was to be disconnected so that they would only be "imagining" the consequences of pushing various buttons. No statistically significant differences were obtained in that small, exploratory study.

Laboratory studies of the sort described above provide the best source of information about basic processes and causal relationships. However, to assure generality of such findings to the more complex natural environment, such investigation must be supplemented by correlational studies (such as those considered in the preceding section) and, if possible, also by experimental field studies.

The investigation conducted by Stein and Friedrich (1971) employed the experimental method in a relatively naturalistic situation in order to determine some of the cumulative or longer-range effects of observing television upon children. The subjects in the Stein experiment were 97 children (52 boys and 45 girls) between three and one-half and five and one-half years of age, who were systematically exposed to television programs of differing content during the course of their participation in a summer nursery school.

This carefully designed experiment involved an initial measurement period in which the free play of children in the nursery school was observed and rated according to a variety of categories; a four-week experimental period in which children were systematically exposed either to aggressive cartoons (*Batman* and *Superman*), neutral television programming (children working on a farm and the like), and prosocial programming (episodes from the program *Misterogers Neighborhood*; and

a two-week postviewing period in which effects could be observed and assessed.

The children were exposed to the programs or films for approximately 20 minutes per day, three times a week during a four-week period. During this time, and during the two-week postviewing period, the children's behavior was again systematically observed in the naturalistic preschool situation. Behavior ratings included measures of aggression, prosocial behavior, and self-control.[6] They were checked carefully for reliability and collected by raters who were "blind" to the children's treatment. Analyses of data were based on four observation periods, because the first and second two weeks of the experimental period were separated so as to identify changes during this time in the effects of the programs.

Stein and Friedrich found that children who were initially in the upper half of the sample in interpersonal aggression subsequently showed greater interpersonal aggression if they were exposed to the aggressive programming than if they were exposed to either the neutral or prosocial programming; but children who were initially low in aggression did not respond differentially to these treatments. Children exposed to the prosocial and neutral television programs did not differ from each other on these measures of interpersonal aggression. The investigators appropriately described their findings on this measure as follows:

> These results suggest that children who initially are high in aggression respond to aggressive television programs with higher levels of aggression than they would under neutral conditions. These effects occurred in naturalistic behavior that was removed both in time and in environmental setting from the viewing experience. They occurred with a small amount of exposure, particularly in relation to the amount the children received at home, and they endured during the postviewing period.

In contrast to the effects detected for interpersonal aggression, the television programs did not have a systematic effect upon either fantasy aggression or aggression toward inanimate objects.

A second measure on which the programs were shown to have differential effects upon children was prosocial self-control. This term refers to measures of rule obedience, tolerance of delay, and task persistance which the children showed in a variety of nursery school situations. Results showed clearly that children exposed to the prosocial television programs subsequently displayed higher levels of self-control on each of these measures than did children exposed to the aggressive programs, while those observing the neutral programs generally showed self-control which fell between the other two groups. These findings were particularly true for children with relatively high IQs. Moreover, the direction of the changes in the two groups appeared to have been antithetical; that is, children who observed the aggressive programs decreased on these measures of self-control relative to the baseline, while those who observed prosocial programs generally increased. Thus, as Stein and

Friedrich note: "following the procedure of using the Neutral group as the comparison point for evaluating the effects of the experimental treatments, it appears that the aggressive programs have a deleterious effect on children's willingness to tolerate delay, and to a lesser extent, on rule obedience."

The effects of the programs on children's prosocial behavior were somewhat more complicated, because they interacted with the socioeconomic background of the children. Specifically, exposure to the prosocial television programs produced an increase in prosocial interpersonal behavior among the lower-class children, while exposure to the aggressive programs resulted in a similar increase among the children from higher socioeconomic backgrounds. Thus, the investigators note that for the latter group, the reduction in self-control produced by aggressive programs was accompanied by:

> Increased social interaction that was primarily cooperative. It appears, therefore, that the aggressive programs had a general stimulating effect for the higher SES children that led to higher social interaction and lower levels of personal control. For those who were already aggressive, it led to aggression as well.

EVALUATION AND SUMMARY OF RESULTS

Recent research on the relationship between children's viewing of television violence and their aggressive behavior was reviewed in the light of theoretical and methodological issues. The data suggest consistently that children are exposed to a heavy dose of violence on television. It is also clear that they can and do retain some of the aggressive behaviors which they see, and are often able to reproduce them. Differences in recall as a function of age are in the expected direction (better recall with increasing age). Differences in recall as a function of content are less clearly understood, but violent content appears to be learned and remembered at least as well as nonviolent fare.

Children often accept and directly imitate observed aggression in their play activities if the observed performances have been rewarded or have reaped no consequences. They also report copying actual televised sequences in play. Punishment to an aggressive model leads children to avoid reproduction of the exemplary behavior, but does not prevent learning or subsequent performance under more favorable circumstances.

Correlational studies show a regular association between aggressive television viewing and variety of measures of aggression. For measures of attitudes and approval of aggression, such a result often appears for both sexes. When measures of aggressive behavior are considered, the relationship may be limited to boys. These correlational studies have employed impressively broad samples in terms of range of economic backgrounds and family characteristics.

It is important to note that the correlational results, while generally consistent, point to a moderate (rather than a strong) relationship between watching television violence and subsequent aggressive attitudes and behavior. Further, the relationship is attenuated by the presence of certain family and cultural characteristics. Just as a child's food diet or exercise are related to his health but do not predict it exclusively or even predominantly, children's exposure to television violence is related to some measures of aggression. Correlational studies support, but do not prove, the hypothesis of a causal relationship between exposure to television violence and aggression.

Experimental studies of disinhibitory and inhibitory effects preponderantly show that observing violence can lead to an increase in a child observer's willingness to aggress. These findings are also consistent with the correlational data. But, as Berkowitz has noted, it is important to distinguish between the statement that observation of violence *can* have such effects and that it *will* have them for any particular child or program, since ". . .a good many situational and personal factors influence the relationship between witnessed violence and the likelihood of aggressive actions by observers, including the observers' attitudes toward the violent event, the extent to which they are set to act aggressively, their aggressive habits, etc."

Recent studies provide support for each of the qualifiers mentioned above. For example, Stein and Friedrich found that naturalistic aggression was increased by watching aggressive cartoons only for children who were relatively aggressive initially; Feshbach found that a specific fantasy set actually reversed the usual impact of having aggression; and Ekman, Liebert, Friesen, Harrison, Zlatchin, Malmstrom, and Baron (1971) found that the 5-6-year-old boys in the Liebert and Baron study were instigated by observing aggression only if they displayed positive facial affects while viewing.

Evidence supporting the assertion that televised violence can reduce aggression is scant and is directly at odds with correlational data based on widely varied samples as tapped by many different researchers.

Almost all experimental studies have some methodological flaws. The Leifer and Roberts (1971) study injected an intervening test between exposure to violence and their measures of aggression; the stimulus materials employed by Liebert and Baron (1971) preserved a story line in the aggressive program but not in the nonaggressive one; Stein and Friedrich's control group observed films while the other groups watched actual television programs. An extended list would encompass almost all the other experimental studies cited in this paper. It is important, however, that each of these flaws tends to be unique rather than shared by all of the investigators. The studies are quite consistent in the overall direction of their findings and, in the aggregate, may be defended soundly against charges of confounded effects.

While it is possible to thoughtfully analyze any given investigation regarding the question of adequacy of design, there is no easy answer to the question of their external applicability. In fact, sophisticated researchers have long ago forsaken the concept of the "critical experiment" regarding any sort of final knowledge about general processes in the social sciences. Instead, it is widely agreed that the best solution lies in considering the accumulated weight of evidence on a particular issue, coming variously from surveys, correlational studies, and experiments conducted both in the laboratory and in the field. If the balance is sufficiently tipped when a variety of methods, approaches, and laboratories are considered, then the researcher can draw conclusions of social applicability with some confidence.

The present writer believes that the findings discussed here, in conjunction with the considerable body of earlier research, warrant formally advancing some tentative conclusions into the arena of public debate. Specifically, the following summary is suggested by the data in aggregate:

1. It has been shown convincingly that children are exposed to a substantial amount of violent content on television, and that they can remember and learn from such exposure.

2. Correlational studies have disclosed a regular association between aggressive television viewing and a variety of measures of aggression, employing impressively broad samples in terms of range of economic background and geographic and family characteristics.

3. Experimental studies preponderantly support the hypothesis that there is a directional, causal link between exposure to television violence and an observer's subsequent aggressive behavior.

It has been repeatedly shown in experimental studies of observing aggression in film and television formats that, under some circumstances, disinhibitory effects can occur in samples covering the age gamut from preschool children to mature adults. At almost every age range, such findings have been found by at least two or more independent research teams. These results generally mesh with the now numerous correlational studies which are able to approach more closely the situations in which viewing, and aggression, occur naturalistically. Studies failing to produce statistically reliable results are a distinct minority, and those suggesting that seeing aggression reduces aggression are rare enough to be called anomalous.

If a probabilistic view of the accumulated evidence is taken, as it typically is in the health sciences, the weight of the evidence to date would seem to represent real progress in determining the effects of violence on television upon youngsters. Specifically, there is more than a trivial basis for a "best guess" conclusion which is central to the major question: *At least under some circumstances, exposure to televised aggression can lead children to accept what they have seen as a partial guide for*

their own actions. As a result, the present entertainment offerings of the television medium may be contributing, in some measure, to the aggressive behavior of many normal children. Such an effect has now been shown in a wide variety of situations.

FOOTNOTES

1. Sincere thanks are due to Emily Davidson, Diane Liebert, John Neale, Jacqueline Portnoy, Rita Poulos, and Michael Sobol for their assistance in the preparation of this paper. The opinions expressed herein remain the responsibility of the author, not of the staff of the Television and Social Behavior program nor necessarily of the investigators whose work is described.
2. According to the usage of Bandura and Walters, inhibitory and disinhibitory effects may include responses which are dissimilar to those displayed by the model, but the emphasis is placed upon the fact that a class of behaviors can be affected. Thus, for these theorists, dissimilarity is not a *defining* property of the processes.
3. It may not be immediately obvious that this last question is a correlational one. It is, however, merely an alternate form of the question: Do the effects of television go together with the sex of the observer?
4. It should be emphasized that this explanation is intended only to illustrate the reasoning involved in this technique, and does not fully reflect its complexities. A complete discussion may be found in Neale and Liebert (in press).
5. An analogous experiment conducted by Larder (1962) showed a similar increase in preference for an aggressive toy by children who had merely *heard* an aggressive story, as compared with children who had been exposed to a nonaggressive story.
6. While many interesting correlations reported by Stein and Friedrich will not be reviewed in this paper, it is of some interest that overall measures of interpersonal aggression and interpersonal prosocial behavior were positively related; i.e., they tended to go together. Thus, children who were more aggressive were also more likely to engage in prosocial types of activities. It is extremely important to note that this result does *not* mean that the two categories will be similarly susceptible to such additional influences as the effects of television. For example, in adults, height and weight (as measures of body size) are also positively related. Nonetheless, if we consider he effects of a change of diet (in this case nutritional diet rather than television diet), it is clear that three milkshakes daily would readily increase the weight of most people but would not influence the height of any of them. Thus, positive relationships between two measures do not mean that both of them will be equally influenced by the presence or absence of some sort of treatment.

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Appendix A: TV and Social Learning: A Summary of the Experimental Effects of Observing Filmed Aggression

Gloria D. Strauss and Rita W. Poulos

This appendix presents the major results of studies appearing in *Television and Social Behavior: an annotated bibliography of research focusing on television's impact on children* (Atkin, Murray, and Nayman, 1971), prepared under the auspices of the National Institute of Mental Health. All research reports included here are experimental in nature and were designed to explore the effects of filmed aggression on the attitudes and/or behavior of the audience. Additionally, each report met the following requirements:

1. One or more groups of subjects were exposed to films or television programs displaying violence or aggression.
2. At least one group of subjects was not exposed to film or television aggressive content, thereby constituting a control condition.
3. At least one dependent variable was examined which might tap subjects' aggression, whether measured behaviorally or through attitude questionnaires.
4. A statistically significant result was obtained.

The material is presented in two lists. The first includes those studies which lend support to the hypothesis that observing filmed violence can instigate aggression by the viewer. The second group of studies includes those which support the hypothesis that observing filmed violence can reduce aggressive behavior by the viewer.

It should be noted that this is *not* an independent literature search, since even studies conducted more recently for the Television and Social Behavior program or many cited in Liebert's review are not included. Rather, it is an attempt to summarize the findings of experiments included in the Atkin, Murray, and Nayman bibliography according to their relevance to a particular pair of opposing hypotheses.

The following studies provide support for the hypothesis that viewing aggression can instigate aggression:

Reference	Subjects	Independent variables	Main dependent variable	Results
1A. Bandura, Ross, and Ross (1963a)	Nursery school children	Four conditions: 1) human aggressive model—live 2) human aggressive model—film 3) cartoon aggressive model—film 4) no treatment	Behavioral rating in play situation	Ss who observed aggressive models exhibited more aggression than did those who did not. Filmed instances of aggression were as effective as real-life sequences.
2A. Bandura, Ross and Ross (1963b)	Nursery school children	Four conditions: 1) aggressive model—rewarded 2) aggressive model—punished 3) active but non-aggressive model 4) no exposure to model	Behavioral rating in play situation	Ss who observed the aggressive model rewarded displayed more aggression than children in the other three groups. Ss who observed the aggressive model punished did not differ from those who viewed the nonaggressive model or who were not exposed to a model.
3A. Berkowitz, Corwin, and Heironimus (1963)	College males	Three factors: 1) angered vs. neutrally treated Ss 2) aggressive vs. neutral film 3) justified vs. unjustified filmed aggression	Attitude measures	Ss who were angered and viewed a film involving justified aggression indicated greater hostility toward their tormenter than Ss who viewed the neutral film. Ss who viewed the neutral film displayed more "indirect aggression" than did those who viewed a film including a sequence of relatively unjustified aggression.
4A. Berkowitz and Green (1966)	College males	Three factors: 1) angered vs. neutrally treated Ss	Electric shock administered to confederate	Angered Ss who viewed the aggressive film and who interacted with the cue-valenced confederated were more aggressive than Ss in any other group.

The following studies provide support for the hypothesis that viewing aggression can instigate aggression: (Continued)

Reference	Subjects	Independent variables	Main dependent variable	Results
		2) aggressive vs. neutral film 3) confederate did or did not have cue value		
5A. Berkowitz and Geen (1967)	College males	Three factors: 1) aggressive vs. neutral film 2) justified vs. unjustified filmed aggression 3) confederate did or did not have cue valence	Electric shock administered to confederate	Ss who saw the justified aggressive film and interacted with a cue-valenced confederate were more aggressive than those who saw the neutral film and interacted with the cue-valenced confederate.
6A. Geen and Berkowitz (1967)	College students	Three factors: 1) frustrated vs. insulted vs. neutrally treated Ss 2) aggressive vs. neutral film 3) confederate did or did not have cue value	Electric shock administered to confederate	Ss who were insulted prior to observing an aggressive film behaved more aggressively than did Ss who were insulted prior to observing the neutral film.
7A. Hanratty, Liebert, Morris, and Fernandez (1969)	4 and 5 year-old males	One factor: 1) film in which an adult aggressed against a clown vs. no film	Behavioral rating in a play situation	Children who viewed the film were more aggressive than those who did not.
8A. Hartmann (1969)	Adolescent males (delinquent)	Two factors: 1) angered vs. neutrally treated Ss.	Administration of electric shock	Ss who witnessed the aggressive film administered more shock than those who saw the neutral film.

The following studies provide support for the hypothesis that viewing aggression can instigate aggression: (Continued)

Reference	Subjects	Independent variables	Main dependent variable	Results
		2) film involving a neutral game vs. film of a boy's aggressive behavior vs. film of the pain reactions of a victim of aggression		
9A. Heinrich (1961)	Children, aged 12 to 16	One factor: 1) aggression-arousing vs. appeasing vs. ambivalent films	Attitude measures	Aggressive attitudes were stimulated by some aggression-arousing films, reduced by one of the appeasing films, and not influenced by the ambivalent films.
10A. Lovaas (1961)	Nursery school children	One factor: 1) aggressive vs. nonaggressive cartoon	Choice of aggressive vs. neutral toy	Ss who had seen the aggressive film preferred the aggressive toy, while Ss who had viewed the nonaggressive film preferred the nonaggressive toy.
11A. Mussen and Rutherford (1961)	Six- and seven-year-old children	Two factors: 1) frustrated vs. neutrally treated Ss 2) aggressive cartoon vs. nonagressive cartoon vs. no cartoon	Desire to destroy an inanimate object	Ss who saw the aggressive film expressed more aggressive impulses than those in other groups.
12A. Walters and Parke (1964)	Preschool males	Four conditions: 1) disobedient model—rewarded 2) disobedient model—punished 3) disobedient model—no consequences 4) no film	Resistance to temptation to disobey	Ss who saw the model punished and those who saw no film exhibited little disobedience. Children who saw disobedience rewarded or receive no consequences disobeyed more.

The following studies provide support for the hypothesis that viewing aggression can instigate aggression : (Continued)

Reference	Subjects	Independent variables	Main dependent variable	Results
13A. Walters and Llewellyn-Thomas (1963)	High school males and adults	One factor: aggressive film vs. neutral film	Administration of electric shock	Ss who had seen the aggressive film administered more shocks than they had done previously.
14A. Walters and Willows (1968)	7-11 year-old males (emotionally disturbed and normal)	Three conditions: 1) aggressive model—film 2) nonaggressive model—film 3) neutral film	Behavioral rating in a play situation	Ss who observed the aggressive model displayed more aggression than did Ss who were exposed to the nonaggressive model or neutral film.
15A. Walters, Leat, and Mo Zei (1963)	Kindergarten males	Three conditions: 1) disobedient model—rewarded 2) disobedient model—punished 3) no film	Resistance to temptation to disobey	Ss who saw the model rewarded were more aggressive than those who saw the model punished; Ss who saw the model punished aggressed less than those who did not see a film.
16A. Walters, Llewellyn-Thomas, and Acker (1962)	Adult males	Two conditions: 1) aggressive film 2) neutral film	Shock to confederate	Ss who viewed the aggressive film were more aggressive.

The following studies provide support for the hypothesis that viewing aggression can reduce aggression

Reference	Subjects	Independent variables	Main dependent variable	Results
1B. Feshbach (1961)	College males	Two factors: 1) insulted vs. neutrally treated Ss 2) aggressive vs. neutral film	Attitude meaures	Ss who had been insulted prior to viewing the aggressive film showed less aggression than similar Ss who viewed the neutral film.
2B. Feshbach (1969)	Preadolescent and adolescent males	One factor: steady diet of aggressive TV vs. steady diet of neutral TV shows	Daily behavior rating by institutional personnel; personality tests; attitude scales.	Exposure to aggressive television content reduced or controlled expression of aggression.

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